Name: Date:

Polynomial Factoring solution (version 673)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 - 8x + 24 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(24)}}{2(1)}$$

$$x = \frac{-(-8) \pm \sqrt{64 - 96}}{2(1)}$$

$$x = \frac{8 \pm \sqrt{-32}}{2}$$

$$x = \frac{8 \pm \sqrt{-16 \cdot 2}}{2}$$

$$x = \frac{8 \pm 4\sqrt{2}\, i}{2}$$

$$x = 4 \pm 2\sqrt{2}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $7 - 4i$ and $2 - 3i$ in standard form $(a + bi)$.**

Solution

$$(7 - 4i) \cdot (2 - 3i)$$

$$14 - 21i - 8i + 12i^2$$

$$14 - 21i - 8i - 12$$

$$14 - 12 - 21i - 8i$$

$$2 - 29i$$

Polynomial Factoring solution (version 673)

3. **Write function $f(x) = x^3 + 12x^2 + 47x + 60$ in factored form. I'll give you a hint: one factor is $(x + 5)$.**

Solution

	1	12	47	60
-5		-5	-35	-60
	1	7	12	0

$$f(x) = (x+5)(x^2+7x+12)$$

$$f(x) = (x+5)(x+3)(x+4)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = (x+8)\cdot(x+4)^2\cdot(x-1)^2$$

Sketch a graph of polynomial $y = p(x)$.